Author(s): Vygranenko, Y (Vygranenko, Y.); Fathi, E (Fathi, E.); Sazonov, A (Sazonov, A.); Vieira, M (Vieira, M.); Nathan, A (Nathan, A.)

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Abstract: We report on structural, electronic, and optical properties of boron-doped, hydrogenated nanocrystalline silicon (nc-Si:H) thin films deposited by plasma-enhanced chemical vapor deposition (PECVD) at a substrate temperature of 150 degrees C. Film properties were studied as a function of trimethylboron-to-silane ratio and film thickness. The absorption loss of 25% at a wavelength of 400 nm was measured for the 20 nm thick films on glass and glass/ZnO:Al substrates. By employing the p(+) nc-Si:H as a window layer, complete p-i-n structures were fabricated and characterized. Low leakage current and enhanced sensitivity in the UV/blue range were achieved by incorporating an a-SiC:H buffer between the p- and i-layers.

Addresses: [Vygranenko, Y.; Vieira, M.] ISEL, P-1949014 Lisbon, Portugal; [Fathi, E.; Sazonov, A.] Univ Waterloo, Dept Elect & Comp Engn, Waterloo, ON N2L 3G1, Canada; [Vieira, M.] CTS UNINOVA, P-2829516 Quinta Da Torre, Caparica, Portugal; [Nathan, A.] UCL, London Ctr Nanotechnol, London WC1H 0AH, England

Reprint Address: Vygranenko, Y, ISEL, Rua Conselheiro Emidio Navarro 1, P-1949014 Lisbon, Portugal.

E-mail Address: yvygranenko@deetc.isel.ipl.pt

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